

CLAIMS

1. A control method for an arc welding apparatus comprising the steps of :
detecting welding voltage;
5 calculating a change amount of the welding voltage; and
detecting neck of a droplet by the change amount of the welding voltage
and a second threshold,
wherein based on a result of comparison between the change amount of
the welding voltage and a first threshold, detecting the neck of the droplet by
10 the change amount of the welding voltage and the second threshold is
prohibited for a predetermined period.
2. The control method for an arc welding apparatus of claim 1, wherein the
first threshold is a negative threshold for preventing wrong detection of the
15 neck of the droplet, the second threshold is a positive threshold for detecting the
neck of the droplet, and when the change amount of the welding voltage is
smaller than the first threshold, the detection of the neck of the droplet by the
second threshold and the change amount of the welding voltage is prohibited for
a predetermined period.
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3. The control method for an arc welding apparatus of claim 2, wherein
when the change amount of the welding voltage becomes smaller than the first
threshold again during the predetermined period in which the detection of the
neck is prohibited, for a predetermined period from the point of time, the
25 detection of the neck of the droplet by the second threshold and the change
amount of the welding voltage is prohibited.

4. A control method for an arc welding apparatus comprising the steps of :
detecting welding voltage;
calculating a change amount of the welding voltage;
determining neck of a droplet based on the change amount of the welding
5 voltage and a neck determination threshold of a droplet;
storing a short-circuit processing state at the time in a case where neck is
determined; and
determining neck and then determining any one of an arc period and a
short-circuit period based on the welding voltage, and carrying out a short-
10 circuit processing from the stored short-circuit processing state in a case where
a short-circuit period is determined when a predetermined period has passed
after the neck was determined.

5. The control method for an arc welding apparatus of claim 4, further
15 comprising step of prohibiting determination that a predetermined period after
the point of time when a short-circuit processing is carried out from the stored
short-circuit processing state is any one of an arc period and a short-circuit
period.

20 6. A control method for an arc welding apparatus comprising the steps of :
determining that short circuit is opened based on welding voltage and a
short-circuit opening determination threshold;
storing a short-circuit processing state at the time in a case where it is
determined that the short circuit is opened;
25 determining whether an arc period or a short-circuit period based on the
welding voltage after it is determined that the short circuit is opened; and
carrying out the short-circuit processing from the stored short-circuit

processing state in a case where a short-circuit period is determined in a predetermined period after it is determined that the short circuit is opened.

7. The control method for an arc welding apparatus of claim 6, wherein in a
5 case where a short-circuit period is not determined in a predetermined period after it is determined that the short circuit is opened, the stored short-circuit processing state is abandoned and an arc processing is carried out.

8. An arc welding apparatus comprising:
10 a voltage detector for detecting welding voltage;
a voltage change amount detection part for calculating a change amount of the welding voltage detected by the voltage detector; and
a comparison part for comparing a first threshold and/or a second threshold with a calculation result of the voltage change amount detection part,
15 wherein based on a result of comparison between the first threshold and a calculation result of the voltage change amount detection part, detection of neck of a droplet by the second threshold and a calculation result of the voltage change amount detection part is prohibited for a predetermined period.

20 9. The arc welding apparatus of claim 8, wherein the first threshold is a negative threshold for preventing wrong detection of the neck of the droplet, the second threshold is a positive threshold for detecting the neck of the droplet, and when the calculation result of the voltage change amount detection part is smaller than the first threshold, the detection of the neck by the second
25 threshold and the calculation result of the voltage change amount detection part is prohibited for a predetermined period.

10. The arc welding apparatus of claim 9, wherein when the calculation result of the voltage change amount detection part becomes smaller than the first threshold again during the predetermined period in which the detection of the neck is prohibited, for a predetermined period from the point of time, the
5 detection of the neck of the droplet by the second threshold and the calculation result of the voltage change amount detection part is prohibited.

11. An arc welding apparatus comprising:
a neck determination part for determining neck of a droplet based on a
10 change amount of welding voltage and a neck determination threshold;
a control state storage part for storing a short-circuit processing state at the time in a case where neck is determined;
an arc / short-circuit determination part for determining whether an arc period or a short-circuit period based on welding voltage after neck is
15 determined; and
a welding output control part for carrying out a short-circuit processing from the short-circuit processing state stored in the control state storage part in a case where a short-circuit period is determined when a predetermined period has passed after neck was determined.

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12. The arc welding apparatus of claim 11, further comprising a welding output control part for prohibiting determination that a predetermined period from the point of time the short-circuit processing is started is any one of an arc period and a short-circuit period.

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13. An arc welding apparatus comprising:
an arc / short-circuit determination part for determining that short

circuit is opened based on welding voltage and a short-circuit opening determination threshold;

a control state storage part for storing a short-circuit processing state at the time in a case where it is determined that short circuit is opened;

5 an arc / short-circuit determination part for determining any one of an arc period and a short-circuit period based on the welding voltage after it is determined that short circuit is opened, and

a welding output control part for carrying out a short-circuit processing from a short-circuit processing state stored in the control state storage part in a
10 case where a short-circuit period is determined in a predetermined period after it is determined that short circuit is opened.

14. The arc welding apparatus of claim 13, wherein in a case where a short-circuit period is not determined in a predetermined period after it is determined
15 that the short circuit is opened, a short-circuit processing state stored in the control state storage part is abandoned and an arc processing is carried out.